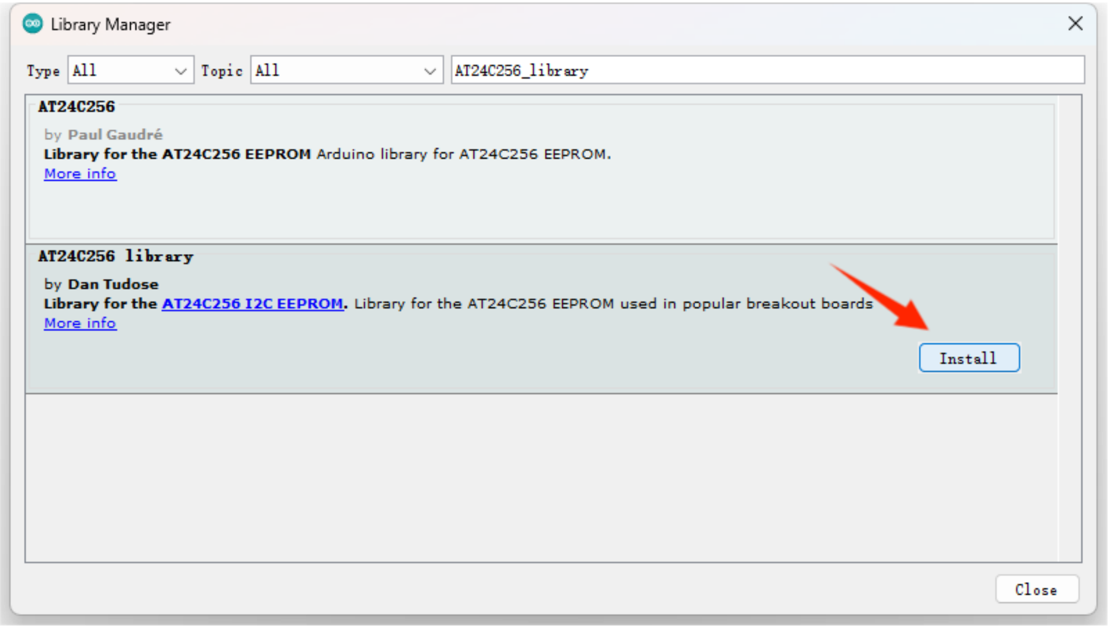
Lesson Guide

Lesson 1：EEPROM Storage Program:

1. Click Sketch in the Arduino IDE, select Manage Library in Include Library, search AT24C256_library, and click Install.



Library Manager

Type: All Topic: All AT24C256_library

AT24C256
by Paul Gaudré
Library for the AT24C256 EEPROM Arduino library for AT24C256 EEPROM.
More info

AT24C256 library
by Dan Tudose
Library for the AT24C256 I2C EEPROM. Library for the AT24C256 EEPROM used in popular breakout boards
More info

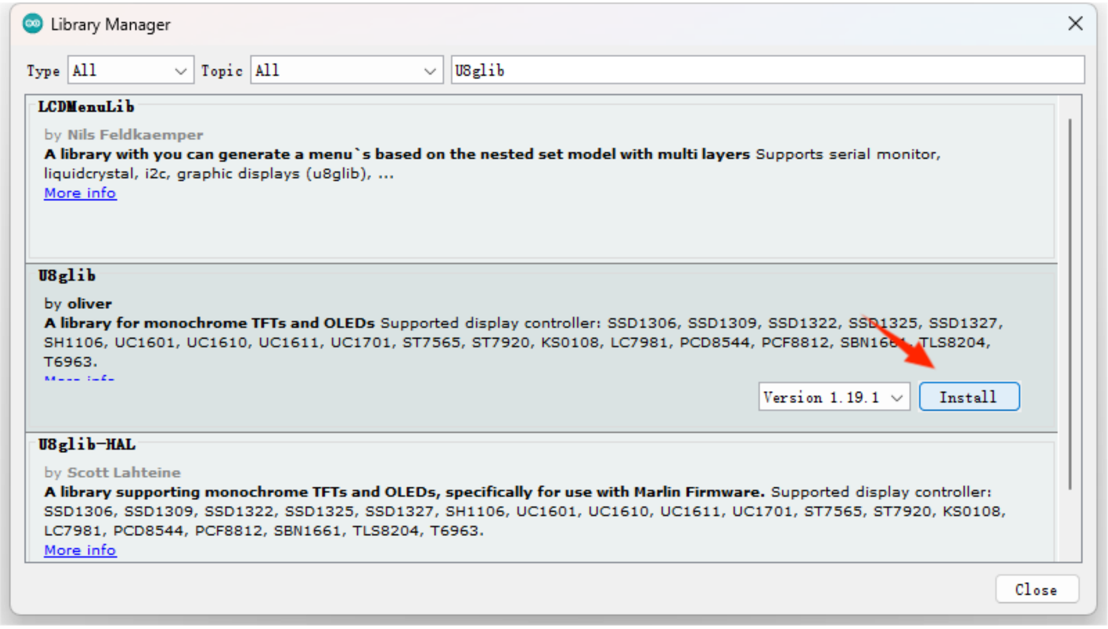
1. Click File in the Arduino IDE, and select read_wirte in AT24C256_library from Examples.

2. Click Upload, and click Serial Monitor in the upper right corner of the IDE.

Lesson 2: 0.96in LED Screen Program:

1. Click Sketch in the Arduino IDE, select Manage Library in Include Library, search U8glib, select U8glib and click

Install.



Library Manager

Type All Topic All U8glib

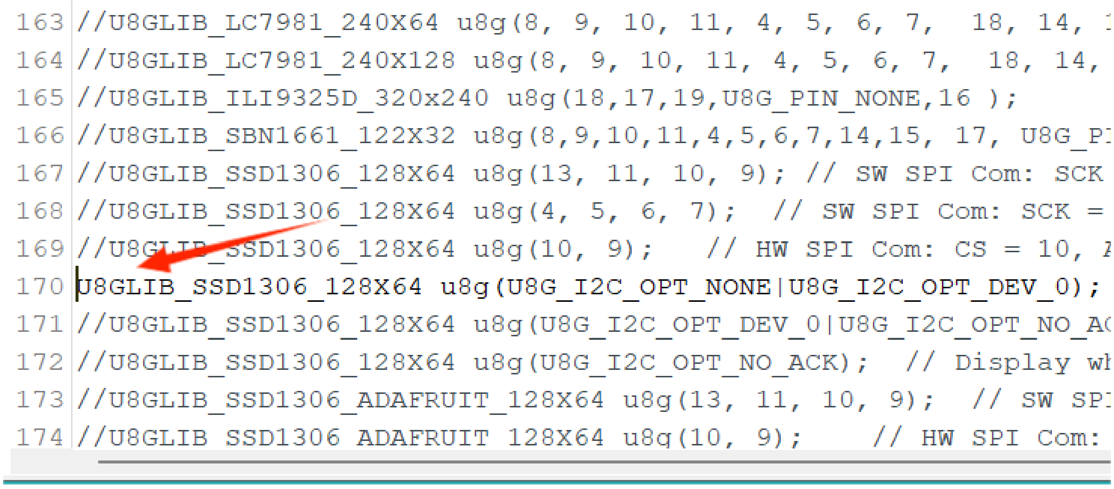
LCDMenuLib
by Nils Feldkaemper
A library with you can generate a menu`s based on the nested set model with multi layers Supports serial monitor, liquidcrystal, i2c, graphic displays (u8glib), ...
More info

U8glib
by oliver
A library for monochrome TFTs and OLEDs Supported display controller: SSD1306, SSD1309, SSD1322, SSD1325, SSD1327, SH1106, UC1601, UC1610, UC1611, UC1701, ST7565, ST7920, KS0108, LC7981, PCD8544, PCF8812, SBN1661, TLS8204, T6963.
More info

U8glib-HAL
by Scott Lahteine
A library supporting monochrome TFTs and OLEDs, specifically for use with Marlin Firmware. Supported display controller: SSD1306, SSD1309, SSD1322, SSD1325, SSD1327, SH1106, UC1601, UC1610, UC1611, UC1701, ST7565, ST7920, KS0108, LC7981, PCD8544, PCF8812, SBN1661, TLS8204, T6963.
More info

2.Click File in the Arduino IDE and select FPS from U8glib in Examples.

1. Find / / U8GLIB_SSD1306_128X64 u8g (U8G_I2C_OPT_NONE | U8G_I2C_OPT_DEV_0); // I2C/TWI code, delete "//" uncomment, click Upload in the upper left corner

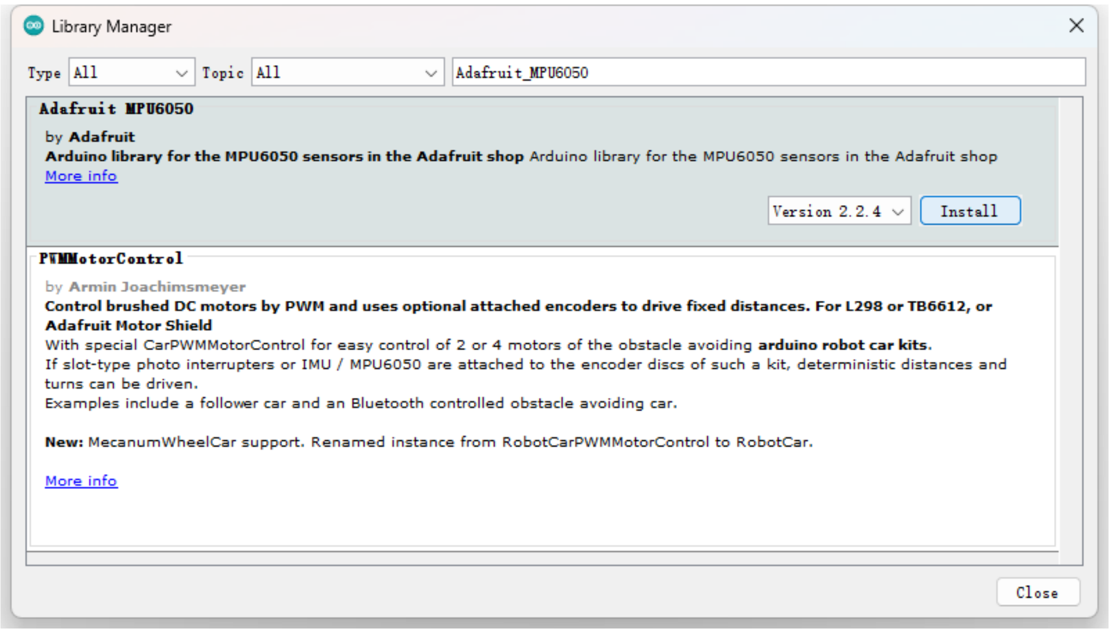


```
//U8GLIB_LC7981_240X64 u8g(8, 9, 10, 11, 4, 5, 6, 7,  18, 14, 1
//U8GLIB_LC7981_240X128 u8g(8, 9, 10, 11, 4, 5, 6, 7,  18, 14,
//U8GLIB_ILI9325D_320x240 u8g(18,17,19,U8G_PIN_NONE,16 );
//U8GLIB_SBN1661_122X32 u8g(8,9,10,11,4,5,6,7,14,15, 17, U8G_PI
//U8GLIB_SSD1306_128X64 u8g(13, 11, 10, 9); // SW SPI Com: SCK
//U8GLIB_SSD1306_128X64 u8g(4, 5, 6, 7);  // SW SPI Com: SCK =
//U8GLIB_SSD1306_128X64 u8g(10, 9);    // HW SPI Com: CS = 10, A
U8GLIB_SSD1306_128X64 u8g(U8G_I2C_OPT_NONE|U8G_I2C_OPT_DEV_0);
//U8GLIB_SSD1306_128X64 u8g(U8G_I2C_OPT_DEV_0|U8G_I2C_OPT_NO_AC
//U8GLIB_SSD1306_128X64 u8g(U8G_I2C_OPT_NO_ACK);  // Display wh
//U8GLIB_SSD1306_ADAFRUIT_128X64 u8g(13, 11, 10, 9);  // SW SPI
//U8GLIB_SSD1306_ADAFRUIT_128X64 u8g(10, 9);     // HW SPI Com:
```

Lesson 3 : MPU6050 Six Axis Gyroscope

Program:

1.Click Sketch in the Arduino IDE, select Manage Library in Include Library, search for Adafruit_MPU6050, and click Install.



Library Manager

Type All Topic All Adafruit_MPU6050

Adafruit MPU6050

by **Adafruit**

Arduino library for the MPU6050 sensors in the Adafruit shop Arduino library for the MPU6050 sensors in the Adafruit shop

More info

Version 2.2.4 Install

PWMMotorControl

by **Armin Joachimsmeyer**

Control brushed DC motors by PWM and uses optional attached encoders to drive fixed distances. For L298 or TB6612, or Adafruit Motor Shield

With special CarPWMMotorControl for easy control of 2 or 4 motors of the obstacle avoiding **arduino robot car kits**.

If slot-type photo interrupters or IMU / MPU6050 are attached to the encoder discs of such a kit, deterministic distances and turns can be driven.

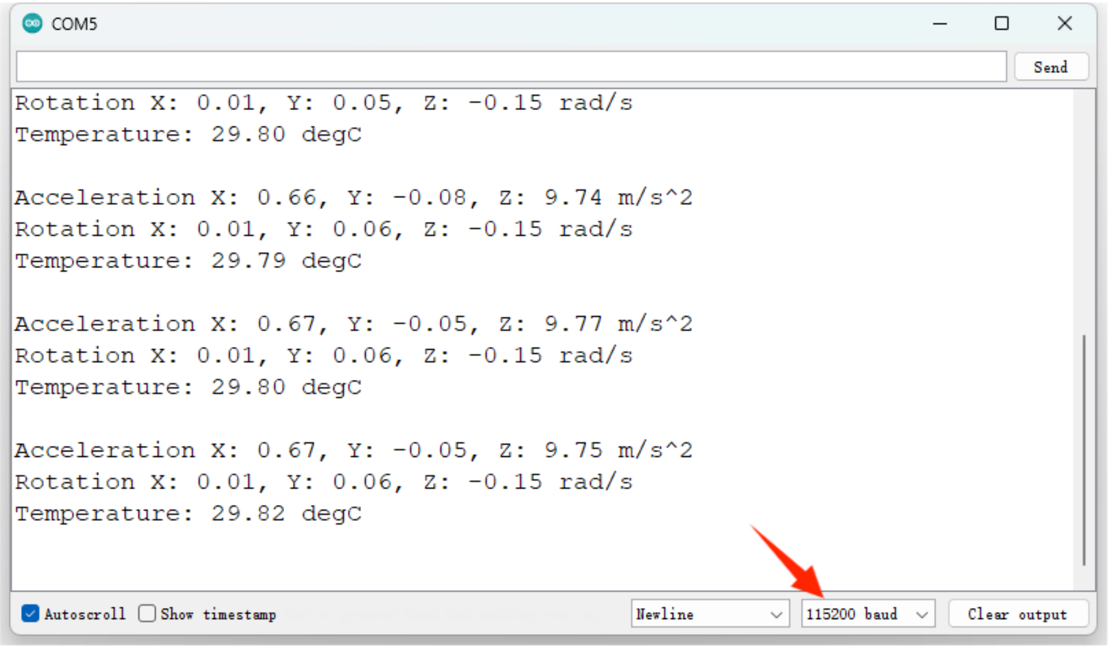
Examples include a follower car and an Bluetooth controlled obstacle avoiding car.

New: MecanumWheelCar support. Renamed instance from RobotCarPWMMotorControl to RobotCar.

More info

2.Click File in the Arduino IDE and select basic_readings in Adafruit_MPU6050 in Examples.

3. Click Upload, click Serial Monitor in the upper right corner of IDE, and switch from 9600baud to 115200baud.



```
Rotation X: 0.01, Y: 0.05, Z: -0.15 rad/s
Temperature: 29.80 degC

Acceleration X: 0.66, Y: -0.08, Z: 9.74 m/s^2
Rotation X: 0.01, Y: 0.06, Z: -0.15 rad/s
Temperature: 29.79 degC

Acceleration X: 0.67, Y: -0.05, Z: 9.77 m/s^2
Rotation X: 0.01, Y: 0.06, Z: -0.15 rad/s
Temperature: 29.80 degC

Acceleration X: 0.67, Y: -0.05, Z: 9.75 m/s^2
Rotation X: 0.01, Y: 0.06, Z: -0.15 rad/s
Temperature: 29.82 degC
```

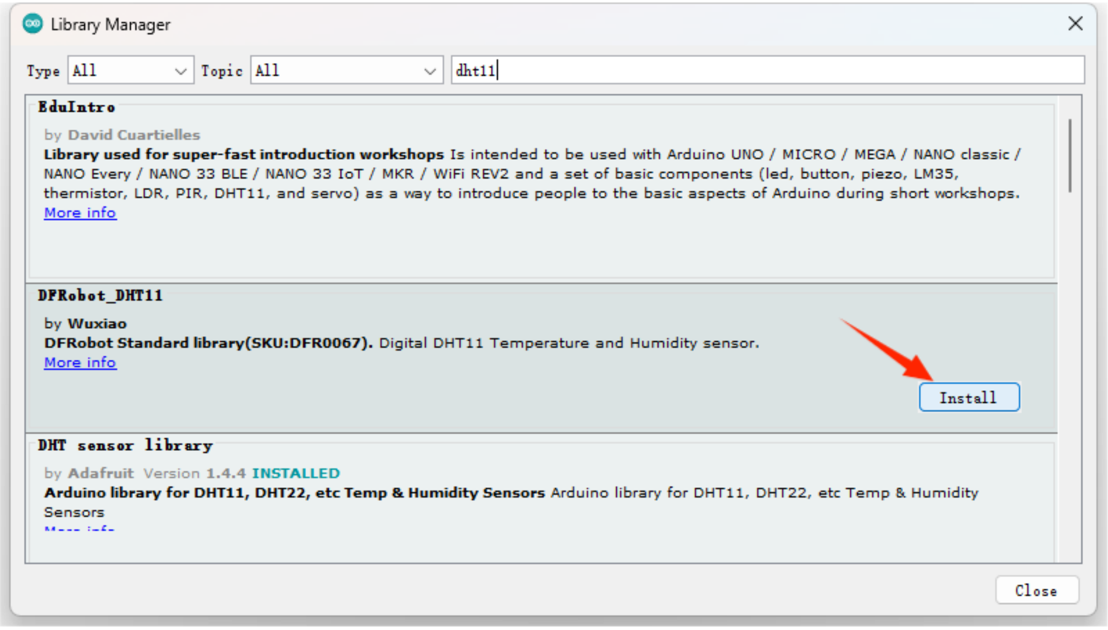
4. Because the initial values of all axes of MPU-6050 cannot be consistent, when Acceleration's X and Y axes are not equal to 0 m/^2 and Z axes are not equal to 9.8 m/^2, and the X, Y and Z of Rotation are not equal to 0rad/s, you can increase or reduce the error values through the program. Make the initial value of the output relatively correct.

Lesson 4：Passive Buzzer Program:

```
#define Pot A3
#define Buzzer 8
int PotBuffer = 0;
void setup()
{
  pinMode(Buzzer,OUTPUT);   // The buzzer pin is set to output
}
void loop()
{
  PotBuffer = analogRead(Pot);      // Reading the AD value
  for(int i = 0 ; i < 50 ; i++)       // Cycle 50 times
  {
    digitalWrite(Buzzer,HIGH);      // Set the output high level
    delayMicroseconds(PotBuffer); // The delay PotBuffer value is us
    digitalWrite(Buzzer,LOW);       // Set the output low level
    delayMicroseconds(100);          // Delay 100us
  }
  delay(1000);                              // Delay 1000ms
}
```

Lesson 5：
DH11 Temperature and Humidity Sensor Program:

1. Click Sketch in the Arduino IDE, select Manage Library in Include Library, search for DHT11, select DFRobot_DHT11, and click Install.



dht11

EduIntro

by David Cuartielles
Library used for super-fast introduction workshops Is intended to be used with Arduino UNO / MICRO / MEGA / NANO classic / NANO Every / NANO 33 BLE / NANO 33 IoT / MKR / WiFi REV2 and a set of basic components (led, button, piezo, LM35, thermistor, LDR, PIR, DHT11, and servo) as a way to introduce people to the basic aspects of Arduino during short workshops.
More info

DFRobot_DHT11

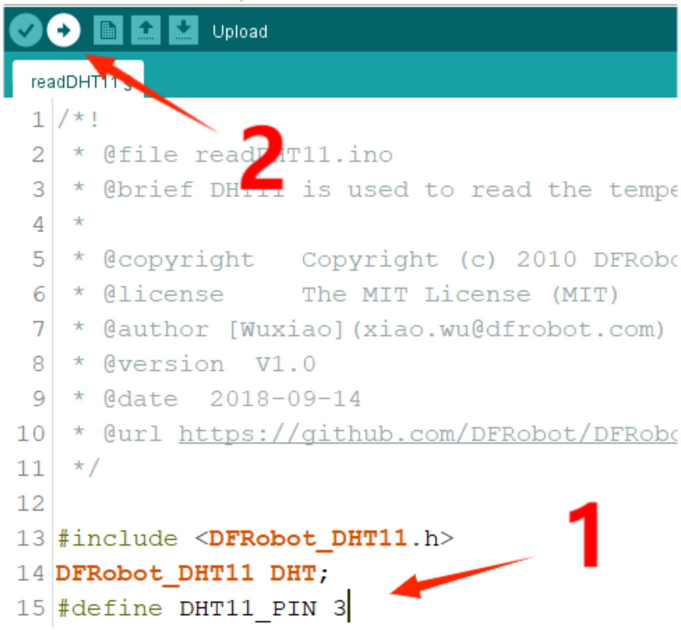
by **Wuxiao**
DFRobot Standard library(SKU:DFR0067). Digital DHT11 Temperature and Humidity sensor.
More info

DHT sensor library

by **Adafruit** Version **1.4.4** **INSTALLED**
Arduino library for DHT11, DHT22, etc Temp & Humidity Sensors Arduino library for DHT11, DHT22, etc Temp & Humidity Sensors

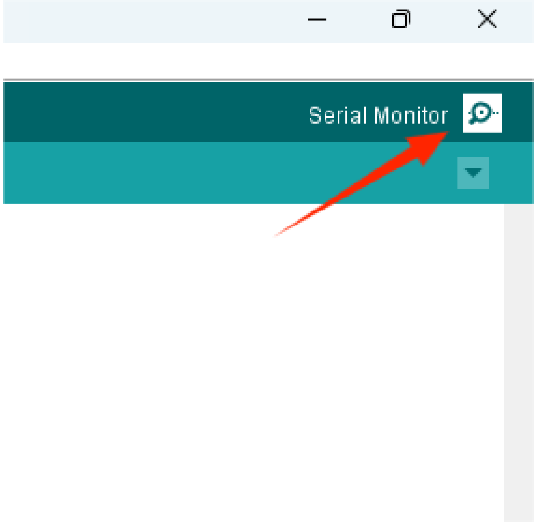
2. Click File in the Arduino IDE, and select readDHT11 in DFRRobot_DHT11 in Examples.

3. Change #define DHT11_PIN 10 to #define DHT11_PIN3 and click IDE home page Upload.



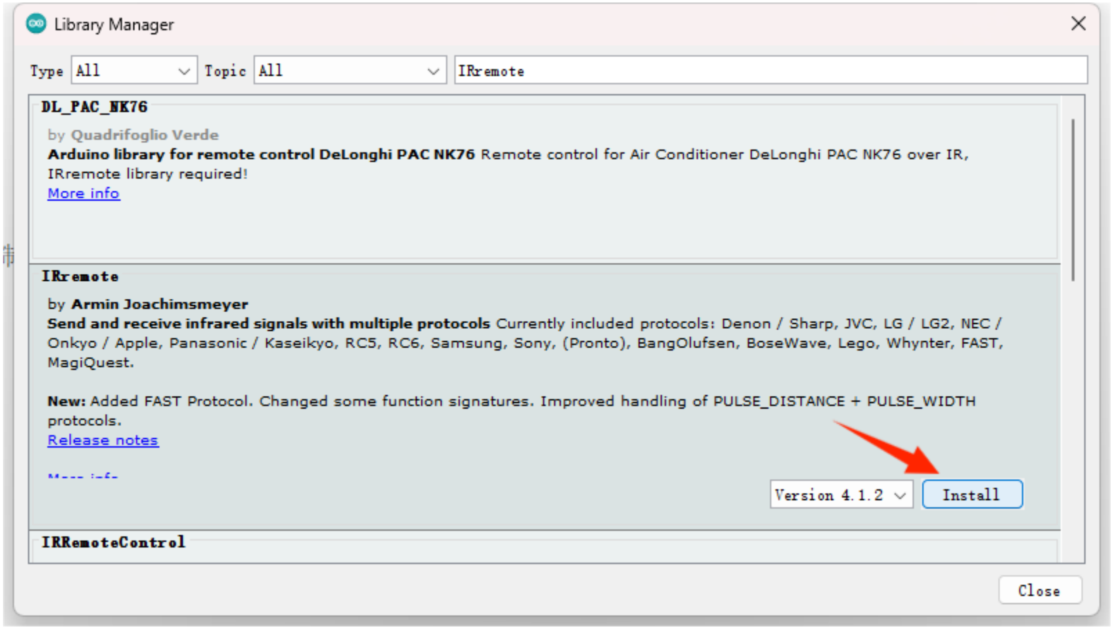
```
/*!
 * @file readDHT11.ino
 * @brief DHT11 is used to read the tempe
 *
 * @copyright   Copyright (c) 2010 DFRobo
 * @license     The MIT License (MIT)
 * @author [Wuxiao](xiao.wu@dfrobot.com)
 * @version  V1.0
 * @date  2018-09-14
 * @url https://github.com/DFRobot/DFRobo
 */

#include <DFRobot_DHT11.h>
DFRobot_DHT11 DHT;
#define DHT11_PIN 3
```

4.Click Serial Monitor in the upper right corner of the IDE and switch 9600baud to 115200baud. Wait about 1S to get the current temperature&humidity。



Lesson6:Infrared Remote Reception Program

1.Click Sketch in the Arduino IDE, select Manage Library in Include Library, search for IRremote, and click Install。



DL_PAC_NK76

by Quadrifoglio Verde
Arduino library for remote control DeLonghi PAC NK76 Remote control for Air Conditioner DeLonghi PAC NK76 over IR, IRremote library required!
More info

IRremote

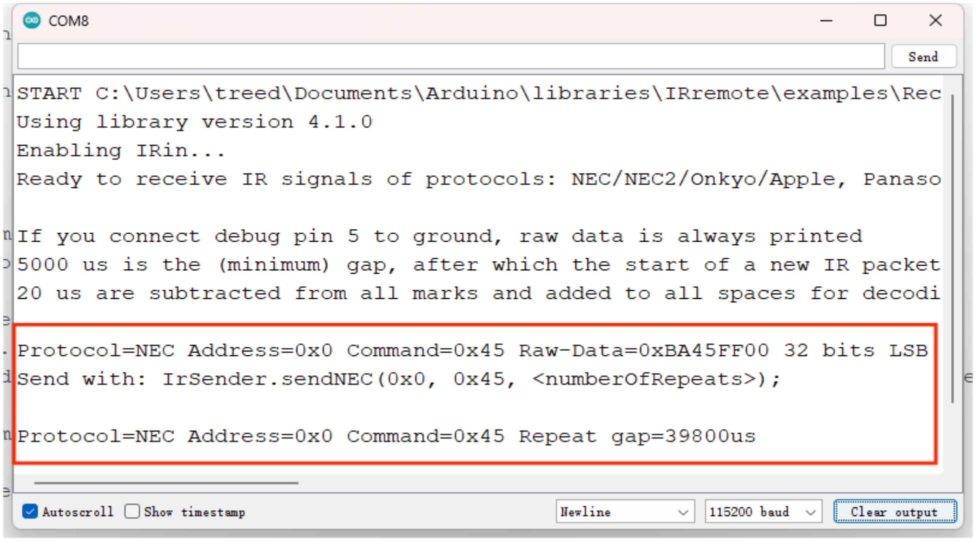
by **Armin Joachimsmeyer**
Send and receive infrared signals with multiple protocols Currently included protocols: Denon / Sharp, JVC, LG / LG2, NEC / Onkyo / Apple, Panasonic / Kaseikyo, RC5, RC6, Samsung, Sony, (Pronto), BangOlufsen, BoseWave, Lego, Whynter, FAST, MagiQuest.

New: Added FAST Protocol. Changed some function signatures. Improved handling of PULSE_DISTANCE + PULSE_WIDTH protocols.
Release notes

IRRemoteControl

2. Click File in the Arduino IDE and select ReceiveDemo from IRremote in Examples.

3. Click Upload, click Serial Monitor in the upper right corner of IDE, and switch from 9600baud to 115200baud. Use the matching remote control to align the infrared receiving module and press any key. When corresponding data appears, the module will run normally.



```
START C:\Users\treed\Documents\Arduino\libraries\IRremote\examples\Rec
Using library version 4.1.0
Enabling IRin...
Ready to receive IR signals of protocols: NEC/NEC2/Onkyo/Apple, Panaso

If you connect debug pin 5 to ground, raw data is always printed
5000 us is the (minimum) gap, after which the start of a new IR packet
20 us are subtracted from all marks and added to all spaces for decodi

Protocol=NEC Address=0x0 Command=0x45 Raw-Data=0xBA45FF00 32 bits LSB
Send with: IrSender.sendNEC(0x0, 0x45, <numberOfRepeats>);

Protocol=NEC Address=0x0 Command=0x45 Repeat gap=39800us
```

Lesson7: Photoresistor Program:

```
#define ADpin A3
#define LED 13
int ADBuffer = 0;
void setup()
{
   pinMode(LED,OUTPUT);
   Serial.begin(9600);            // The baud rate is 9600
}
void loop()
{
   ADBuffer = analogRead(ADpin);     // Reading the AD value
   Serial.print("AD = ");
   Serial.println(ADBuffer);
   if(ADBuffer > 800)              // If the ADBuffer value is larger than the set
value, the illumination intensity is smaller than the set value
   {
digitalWrite(LED,HIGH);     // Light up LED
   }
   else
   {
      digitalWrite(LED,LOW);      // Turn off LED
   }
   delay(500);              // Delay 500ms
}
```

Lesson8: Button Program:

```
#define KEY0 digitalRead(4)
#define KEY1 digitalRead(5)
#define KEY0_PRES 1
#define KEY1_PRES 2

void setup() {
  pinMode(LED_BUILTIN, OUTPUT);
}
void loop() {
   int key;
   key=KEY_Scan(0);// Scan key
   if (key==1)
   {   digitalWrite(LED_BUILTIN, HIGH); }
   if (key==2)
   {   digitalWrite(LED_BUILTIN, LOW);   }
}
u8 KEY_Scan(u8 mode)
{
  pinMode(4,INPUT_PULLUP);
  pinMode(5,INPUT_PULLUP);
    static u8 key_up=1;// Press the button to release the sign
  if(mode)key_up=1;   // Support link
  if(key_up&&(KEY0==0||KEY1==0))
  {
    delay(10);// Jitter elimination
    key_up=0;
    if(KEY0==0)return KEY0_PRES;
    else if(KEY1==0)return KEY1_PRES;
  }else if(KEY0==1&&KEY1==1)key_up=1;
  return 0;// No key to press }
```